REMARKS

Claims 1-16 were originally pending in this application. New method claims 17-20 have been added. Claims 1-4, 8, 9, and 14-16 have been rejected under 35 U.S.C. 102(b) as anticipated by Robertson et al. patent 5,857,042, and claims 5-7 and 10-13 have been rejected under 35 U.S.C. 103(a) as obvious over Robertson and Mays, Jr. (6,853,812).

Applicants' Invention

Embodiments of the invention are as defined in claim 1 and 14 and embodiments of Applicants' method are defined in claims 10 and 17. As called out in claim 1, the optical link comprises "an array of tightly-coupled, multi-wavelength arrays of... VCSELs, operating at predetermined wavelengths; collimating optics for collimating the optical signals emitted from each said multi-wavelength array of VCSELs into a single uniform optical signal." The language of independent apparatus claim 14 is similar, viz., "an array of tightly-coupled, multi-wavelength arrays of ... VCSELs, transmitting signals at predetermined wavelengths; collimating optics for collimating the optical signals emitted from each said multi-wavelength array of VCSELs into a single uniform optical signal."

The Robertson Reference

Robertson has multiple channels comprising an optical signal source, which may be a VCSEL, a first collimating lens, a second collimating lens, and an optical receiver. One VCSEL is matched up with one receiver, with lenses collimating and focusing the signals from the VCSEL to the receiver for each channel. Groups of the receivers and

VCSELs on opposite sides of the apparatus comprise a plurality of parallel optical interconnection channels and are offset with respect to the optical axis for each channel and are tolerant of translational or rotational misalignment and reduces crosstalk.

Robertson fails to disclose "an array of tightly-coupled, multi-wavelength arrays" of VCSELs. Fig. 11 shows an array of optical signal "sources or receivers" (col. 7, line 24), depicting various ways a 4x4 arrangement of devices 33 may be offset to accomplish the purpose of his invention. No mention is made of the term "tightly-coupled" and there is no purpose in having the VCSELs be tightly-coupled because their optical signals are not characterized as, or suggested to be, multi-wavelength, collimated "into a single uniform optical signal."

There is no teaching, suggestion, or purpose in Robertson that there be collimating optics for collimating the optical signals from each said multi-wavelength array of VCSELs into a single uniform optical signal."

Since Robertson fails to show or suggest a portion of claim 1, as discussed above, it cannot be the basis for a rejection under 35 U.S.C. 102(b). Claims 2-9 depend from and serve to further limit and define the invention of claim 1, those claims also define over Robertson.

Independent claim 14, and claims 15 and 16 depending from it, also clearly define over Robertson. The portions of claim 14 quoted above are believed to be patentably distinct from Robertson for the same reasons as advanced with respect to claim 1.

The obviousness Rejection Over a Combination of Robertson and Mays, Jr.

Claim 5-7 depend from clam 1 and were rejected as obvious over these two references.

The Examiner does not suggest that Mays, Jr., discloses or suggests those claim 1 limitations missing from Robertson that have already been identified. Therefore, even if Mays, Jr., shows or suggests optical filters and mating detectors, as stated by the Examiner, the combination fails to suggest the invention defined by claim 5-7.

Method claim 10-13 have also been rejected as obvious over these two references. With respect to Robertson, claim 10 states that "the VCSEL emitters in the array are. . . each . . . set for a different emissive wavelength; fabricating a receiver array [which] . . . comprises a plurality of optical filters and mating photodetector arrangements." There is nothing in Robertson about VCSELs in an array having "a different emissive wavelength," nor does it show or suggest "a plurality of optical filters." Since each transmitter and receiver is a single one-to-one channel of a single wavelength, there would be no reason why Robertson would suggest the use of an optical filter.

As to Mays, Jr., Applicants are of the opinion that it is not proper prior art. The filing date of Mays, Jr., is less than one year prior to Applicants' filing date, and it was published after Applicants' filing date. Thus, under 35 U.S.C. 103, Mays, Jr., is not a prior art reference.

However, Mays, Jr., even if it were prior art, is insufficient to support an obviousness determination of claim 10-13 when combined with Robertson. This reference provides "a communication system that features improved extinction ratio by providing a filter that employs a bulk holographic transform function and a polarizing film." It is recognized that a purpose of Mays, Jr., is to provide a greater number of

channels of communication "in a unit volume while preventing unwanted cross-talk" (Col. 2, lines 2-12). This reference is concerned only with holographic images and polarization. Each individual signal source has its own filtering apparatus (col. 6, lines 15-29) and "each beam produced by array 312 may be provided with unique properties, such as wavelength, amplitude and polarization" (col. 6, lines 15-32).

Claim 11 depends from claim 10 and further defines the receiver structure as "each optical filter and photodetector arrangement has a plurality of segments, each segment having an individual filter and a mating photodetector element where each filter is configured to pass one wavelength and each photodetector converts a specific optical signal with a specified wavelength to an electrical signal." There are no such "plurality of segments" of filters and photodetectors in each of "a plurality of optical filters and mating photodetector arrangements" in either Robertson or Mays, Jr., where "each filter is configured to pass one wavelength" where "each photodetector converts . . . a specified wavelength to an electrical signal." The references do not handle wavelength-specific optical signals as thus defined.

Claims 12 and 13 also depend from claim 10. Contrary to the statement in the Action on page 5 with respect to claim 13, Fig. 8 of Robertson still shows only free space transmission from emitters 24. It is just that at the other side of the free space are optical fibers 25 instead of receivers 17. What the optical signals are coupled into after the free space is not relevant. Claim 13 calls for the signals from the emitters to be transmitted . . . "from the emitter array to the receiver array through optical fibers."

New claim 17 is a method claim patterned after apparatus claims 1 and 14. Claims 18-20 depend from and serve to further define the invention of claim 17. The arguments above with respect to claim 1 and 14 apply equally here in relation to

Robertson. Mays, Jr., even if it were a valid reference, add nothing to Robertson which would provide the limitations which are missing from Robertson.

Conclusion

It is believed that claim 1-20, as discussed above, define patentably over the cited references and favorable reconsideration is requested. Should any issues remain unresolved, the Examiner is invited to telephone the undersigned attorney.

Respectfully submitted,

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